



# Atlas™ Enterprise Server User Guide

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## **Print History**

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**NOTICE:** This equipment generates and uses radio frequency energy, and if not installed and used in strict accordance with this user guide, interference to operation may result. It has been type tested and found to comply with the limits for a Class B computing device, pursuant to Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the equipment with respect to the receiver.
- Move the equipment away from the receiver.
- Plug the computer into a different outlet so that the equipment and the receiver are on different branch circuits.

If necessary, consult your reseller for additional suggestions.

You may find the following booklet prepared by the Federal Communications Commission (FCC) helpful: *How to Identify and Resolve Radio-TV Interference Problems*. This book is available from the U.S. Government Printing Office, Washington, D.C. 20402.

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## Technical Support

**Note:** Please contact your system administrator or reseller first for any technical support issues.

Netier Technologies Technical Support information:

**Telephone:**

1.888.603.1892 (toll free, USA only)

1.972.242.9660 (International)

**Fax:**

1.972.242.6050

**Email:**

[techsupp@netier.com](mailto:techsupp@netier.com)

## Pre-Sales Support

**Telephone:**

1.888.603.1763 (toll free, USA only)

1.972.242.9660 (International)

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Carrollton, TX 75006-6686

## Product Information

Netier complements our thin client desktops with a line of servers designed especially for thin-client/server computing (TCSC). With one to four Intel® Pentium® II Xeon™ or Pentium III Xeon processors and up to 4GB of memory expansion, the Atlas Enterprise Server is the most powerful TCSC solution available. The Atlas Enterprise Server provides a balanced system architecture that is ready to execute the most demanding network applications and provide maximum uptime to mission critical operations.

### Custom-Configured for TCSC

Atlas Enterprise Servers from Netier are configured for your thin-client/server implementation. Based on the number of users and the specific applications each user must access, Netier tailors your Atlas Enterprise Server to give you a high-performance server platform optimized for TCSC. A wide range of complementary peripheral options including removable media drives, external RAID storage systems and rack mounting enclosures are available.

### End-to-End Thin-Client/Server Solutions

Configured and tested by Netier, all of our thin-client/server solutions are custom-built to your specifications. Netier is dedicated to providing the most advanced TCSC products available. We build flexible, intelligent and powerful thin clients, servers, storage arrays and administrative software to ensure your TCSC network is easy to manage today and easy to upgrade in the future as your needs change.

### Operating System Flexibility

Optimized for TCSC operating systems, such as Citrix® WinFrame® and Windows NT 4.0® Terminal Server Edition with Citrix MetaFrame™, the Atlas II Enterprise is also customizable for all Windows NT server environments.

### Sound Investment

Netier's Atlas Enterprise Server is a smart investment regardless of your current needs, because it is designed to respond to changing computing environments. Buy the power you need today and have immediate upgrade capability for your needs tomorrow. Using groundbreaking architecture, the Atlas II Enterprise gives you four-way power for the price of a two-way design.

### Reliability and Maximum Uptime

Like all Netier Atlas Workgroup Server products, the Atlas Enterprise is built for uncompromising reliability and maximum uptime. From component selection to the latest in system architecture, this dependable platform is designed to power critical business applications with minimal downtime. High availability features include hot-swap power supplies, hot-swap SCSI drive bays and robust clustering options enabled by Intel's Service Mode.

### Service without Interruption

Service Mode has been designed for clustering, allowing the internal drive array to remain on-line while the main electronics are powered off for upgrades and maintenance. In this mode, a second server can continue to access the drives through the LVDS SCSI bus.

## Lower Ownership Costs

To control ownership costs, the Atlas Enterprise Server contains a complete set of manageability features so you can anticipate problems. For example, the Emergency Management Port (EMP) provides remote access through a modem. Service technicians can remotely observe critical event logs and reset or power cycle the Atlas Enterprise Server. The Atlas Enterprise Server's powerful on-board management controller and Intel Server Control (ISC) management software let you monitor and control the server's temperatures and voltages, chassis security, baseboard inventory and other hardware functions. Management redundancy also is achieved through the Atlas Enterprise Server's incorporation of Inter-Chassis Management Bus (ICMB) architecture from Intel.

## Features & Benefits

- Supports from one to four 400MHz-450MHz Pentium II Xeon or 500MHz-550MHz Pentium III Xeon processors
- Configurable with 512KB, 1MB or 2MB full-speed L2 cache
- UP to 4GB of EDO ECC system memory via 16 DIMM slots
- Hot-swap redundant power system and six hot-swap SCSI hard drive bays
- Service Mode with separate power control for drive and bay electronics
- SCSI—two integrated LVDS channels with one narrow channel
- Emergency Management Port (EMP) and Intel Server Control (ISC) management software
- Two 32-bit peer PCI channels, six PCI and one shared PCI/ISA slots
- Rack or pedestal configuration within a single chassis

## Benefits

- Power and scalability for thin-client/server computing
- Memory capacity and flexibility for the most demanding applications
- No loss of uptime to replace or upgrade power supply and LVDS hard drives
- Internal drive array remains on-line for second server during upgrades or service to main electronics
- Provides disk I/O bandwidth for future technologies
- In-band and out-of-band remote management lowers ownership costs
- One chassis supports all installations with easy conversion pedestal and rack kits

## Atlas Enterprise Setup

### Server System Configuration

Your Atlas Enterprise server includes a *Server System Configuration Software* CD-ROM. This CD-ROM contains user guides that provide system specifications and installation, operation, and management information. The user guides reside on the *Server System Configuration Software* CD-ROM in portable document format (PDF). Adobe® Acrobat® Reader is included on the *Server System Configuration Software* CD-ROM to view and print the user guides.

These instructions explain how to instal Acrobat Reader and include tips for navigating through the user guides for desired information.

### Installing Acrobat Reader

To install Adobe Acrobat Reader:

- 1 Insert the *Server System Configuration Software* CD-ROM disc into your CD-ROM drive.
- 2 Click **Start**.
- 3 Click **Run**.
- 4 In the Open field, type `D:\acrobat\acroread.exe`, where "D" is the CD-ROM drive designation.
- 5 Click **OK**.
- 6 Follow the steps listed in subsequent windows.

### PDF User Guide Specifications

The following PDF user guides are contained on your *Server System Configuration Software* CD-ROM in the *Manuals* folder:

- SC450NX MP Server System Product Guide  
— PDF Filename: `SDMS.pdf`
- Intel Server Control Installation and User's Guide— PDF Filename: `Isc16a2.pdf`
- PCI SCSI Device Management System SDMS 4.0 — PDF Filename: `70005902.pdf`

#### SC450NX MP Server System Product Guide

This guide lists SCO450NX MP server specifications and features as well as instructions for working inside the system.

#### Intel Server Control Installation and User's Guide

This guide provides instructions to instal and operate the Intel Server Control server management tool on your Atlas Enterprise server.

#### PCI SCSI Device Management System SDMS 4.0

This user guide explains how to install and configure the Symbios Logic SDMS Software in a PCI computer system.

### Obtaining Technical Support

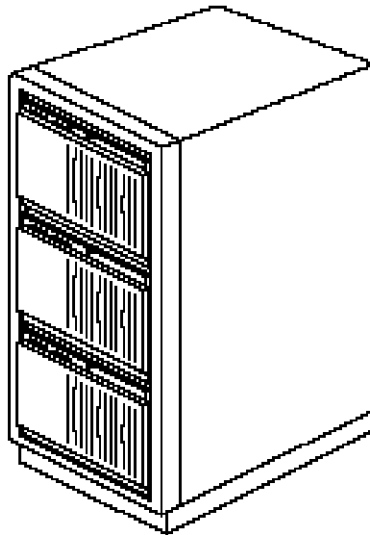
For technical support, please visit the Netier on-line Service and Support Center at [www.netier.com](http://www.netier.com) and select the *Service & Support* link on the left-hand side of your browser or call toll-free **888.603.1892**.

## Configure Chassis

The Atlas Enterprise server is designed to either stand upright (pedestal mode) or be mounted in a rack (rack mode). Figures 1 and 2 show examples of these configurations. Before operation, you must purchase an adapter kit to configure the server for one of the two modes.

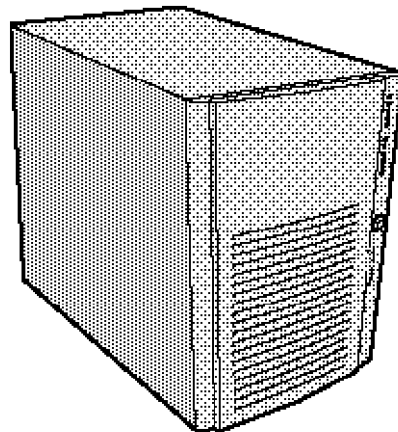
If you have not already purchased a kit for your particular task, contact your customer service representative for details. For instructions on mounting your server, see the printed Atlas Enterprise Server System Rack/Pedestal Kit Installation Guide accompanying your kit.

| SPECIFICATION            | PEDESTAL MODE  | RACK MODE  |
|--------------------------|--|--|
| Height                   | 48.26 cm (19 inches)   | 7u   |
| Width                    | 31.12 cm (12.25 inches)  | 19 inch rack   |
| Depth                    | 63.5 cm (25 inches)  | 25 inches  |
| Weight                   | 38.25 kg (85 lbs) minimum configuration<br>45 kg (100 lbs) maximum configuration | 38.25 kg (85 lbs) minimum configuration<br>45 kg (100 lbs) maximum configuration |
| Required front clearance | 10 inches (inlet airflow <35 °C / 95 °F)   | 10 inches (inlet airflow <35 °C / 95 °F)   |
| Required rear clearance  | 8 inches (no airflow restriction)  | 8 inches (no airflow restriction)  |
| Required side clearance  | 0.0 inches (additional side clearance required for service)                      | N/A  |



Equipment Rack with Three Servers

CMSE045



Single Server in Pedestal Mode

CMSE000

## Select Site

**Caution:** The push-button on/off power switch on the front panel of the server does not turn off the AC power. To remove AC power from the server, you must unplug the AC power cord from each power supply or wall outlet.

**Caution:** ESD precautions

Electrostatic discharge (ESD) can damage disk drives, add-in boards, and other parts. This server can withstand normal levels of environmental ESD. However, we recommend doing all procedures in this guide only at an ESD-protected workstation. If one is not available, you can provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground of the server-any unpainted metal surface-when handling components.

**Caution:** use grounded outlet

Make sure that the power service connection is through a properly grounded outlet.

The server operates reliably within normal office environmental limits. Select a site that meets these criteria:

- Near a properly earthed, grounded, three-pronged power outlet
  - In the United States and Canada: a NEMA 5-15R outlet for 100-120 V~ or a NEMA 6-15R outlet for 200-240 V~
  - In other geographic areas: a properly earthed, grounded outlet in accordance with the local electrical authorities and electrical code of the region
- Clean and relatively free of excess dust
- Well ventilated and away from sources of heat, with the ventilating openings on the server kept free of obstructions
- Away from sources of vibration or physical shock
- Isolated from strong electromagnetic fields and noise caused by electrical devices such as elevators, copy machines, air conditioners, large fans, large electric motors, radio and TV transmitters, and high-frequency security devices
- Access space provided so the server power cords can be unplugged from the power supply or the wall outlet; this is the only way to remove AC power from the server
- Clearance provided for cooling and airflow. For clearance requirements based on chassis configuration, see Table 1 on page 7.

## Check Power Cord

**Caution:** Do not modify or use a supplied AC power cord if it is not the exact type required in the region where the server will be installed and used. Replace the cord with the correct type. Refer to the cord requirements described below.

**Do not plug in any of the server power cords yet if you will be adding internal parts (boards, DIMMs, removable media drives). (For these installation procedures, see the Product Guide.)**

### Power Cord Requirements

- **Rating:** Cords must be rated for available AC voltage and have a current rating at least 125% of current rating of server.
- **Connector, wall outlet end:** Cords must be terminated in grounding-type male plug designed for use in your region. It must have certification marks showing certification by an agency acceptable in your region.
- **Connector, power supply end:** The connector that plugs into the AC receptacle on the server power supply must be an IEC 320, sheet C13, type female connector.
- **Cord length and flexibility:** Cords must be less than 4.5 meters (14.76 feet) long, and must be flexible (harmonized <HAR>) cord or VDE-certified cordage to comply with server's safety certifications.

**Note: Surge suppressor recommended:** In geographic regions that are susceptible to electrical storms, we highly recommend that you plug the server into a surge suppressor.

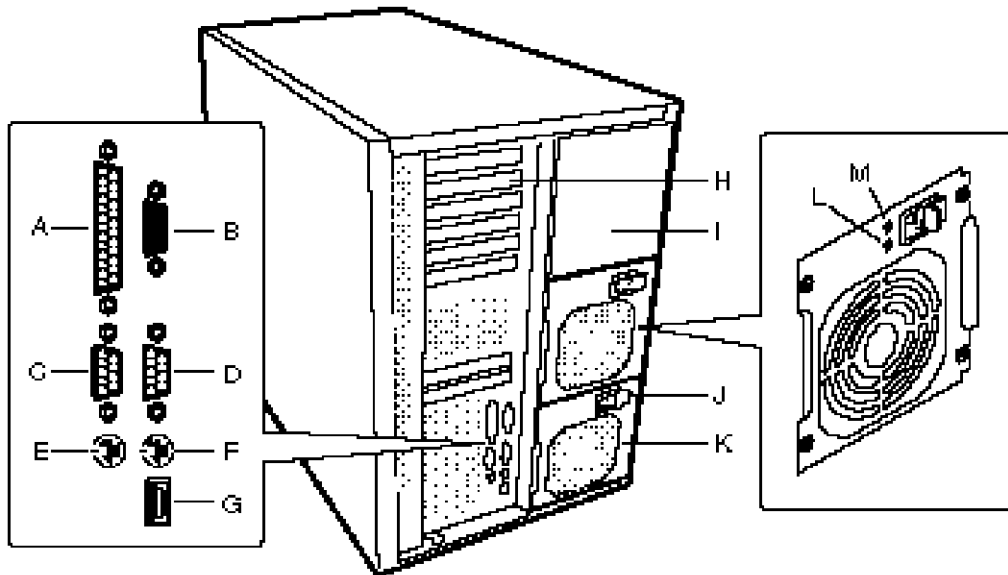
**For EMI information, refer to the Product Guide:** For information about complying with electromagnetic interference regulations, see "Electromagnetic Compatibility" in the server Product Guide.

**To view or print the Product Guide:** See "The Server Product Guide" on page 13 in this Quick Start Guide.

## Connect Monitor, Keyboard, Mouse

**Caution:** unplug server

Before connecting external devices, make sure the server is not plugged in, or equipment could be damaged.



Q405 002

Figure 3: Back Controls and Indicators

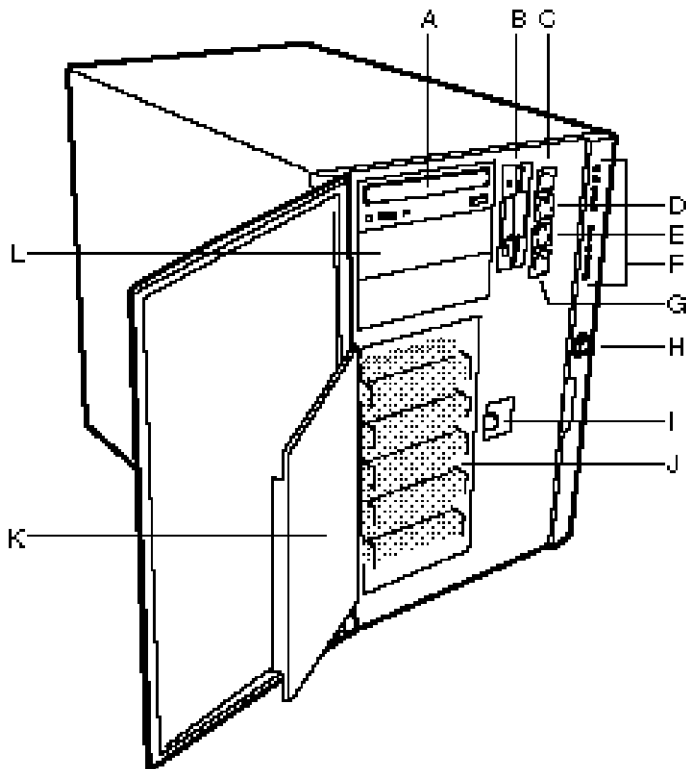
- A** Parallel port
- B** VGA† monitor connector
- C** Serial port A, COM1
- D** Serial port B, COM2 (extended via ribbon cable from back panel to baseboard)
- E** Mouse connector
- F** Keyboard connector
- G** Universal serial bus connector
- H** Expansion slot covers (six slot connectors provided on baseboard)
- I** Power supply bay
- J** AC input power connector
- K** Power supply fan
- L** Power supply LED
- M** Power supply failure LED (LED not lit means failure)

## Turn on Video Monitor and Server

- 1 Make sure all external devices, such as a monitor, keyboard, and mouse, have been connected.
- 2 Remove drive protection card (if present) from the diskette drive.
- 3 Turn on the video monitor.
- 4 Plug the female end of each server AC power cord into each power supply input receptacle on the back of the chassis.
- 5 Plug the male end of each server AC power cord into a wall outlet (a grounded, three-pronged AC power outlet; see page 6 for outlet information).
- 6 If the server does not come on when you plug it into the AC outlet, press the push-button on/off power switch on the front panel.
- 7 Verify that the power-on light on the front panel is lit. After a few seconds, the power-on self test (POST) begins.

### Handy Hint

Power switch is rounded outward (convex). Reset switch is recessed (concave).



000001

Figure 4: Front Controls and Indicators

- A** External drive bay (5¼"), CD-ROM drive shown installed
- B** Diskette drive
- C** Power On/Off button
- D** Sleep/Service button
- E** Reset button
- F** Front panel LEDs (11- top to bottom: top five are power on, disk bay power on, HDU activity, fan failure, power supply failure; bottom six are hard-drive activity LEDs, labeled 0-5)
- G** NMI button
- H** System security lock
- I** EMI shield lock
- J** Internal drive bays (3½")
- K** Metal EMI shield
- L** Expansion drive bay (5¼")

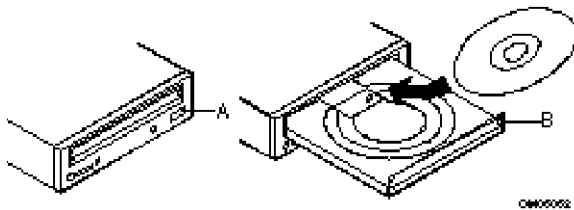
## Run Power-on Self Test

Each time you turn on the system, POST starts running. POST checks the baseboard, processors, memory, keyboard, and most installed peripheral devices. During the memory test, POST displays the amount of memory it is able to access and test. The length of time needed to test memory depends on the amount of memory installed. POST is stored in flash memory.

- 1 Turn on your video monitor and system. After a few seconds, POST begins to run.
- 2 After the memory test, these screen prompts and messages appear:  
*Keyboard Detected*  
*Mouse Initialized*  
*Press <F2> to enter Setup*
- 3 If you do not press <F2> and do NOT have a device with an OS loaded, the above message remains for a few seconds while the boot process continues, and the system beeps once. Then this message appears:  
*Operating System not found*
- 4 If you do not press <F2>, the boot process continues and this message appears:  
*Press <Ctrl><C> to enter SCSI Utility*
- 5 Press <Ctrl+C> if SCSI devices are installed. When the utility opens, follow the displayed instructions to configure the onboard SCSI host adapter settings and to run the SCSI utilities. Also see "Using the Symbios† SCSI Utility" in the Product Guide. If you do not enter the SCSI utility, the boot process continues.
- 6 Press <Esc> during POST to access a boot menu when POST finishes. From this menu, you can choose the boot device or enter BIOS Setup.  
*After POST completes, the system beeps once.*

What appears on the screen after this depends on if you have an OS loaded and if so, which one.

## Boot from CD



*Typical CD-ROM Drive*

- A** Open/close push-button switch
- B** CD tray, CD with label side up

**Caution: Handle CD only by the edges**

Handle the CD by its inner and outer edges. Do not touch the side without the label (the data side).

**Caution: CD contains only a limited OS**

The CD contains a limited OS with enough function to let you boot from the CD and copy and use the utility and manual files from the CD.

But this limited OS is NOT intended to be copied onto diskettes or onto your hard disk as a full-function OS that supports networking or Windows†. To run your server and applications, you must buy the OS of your choice and install it on the server.

**Note:** The server was shipped with the diskette drive set as the first boot device. The server will, therefore, try to boot from diskette rather than from the CD-ROM. Even with the CD in the drive, the server might continue to display "Operating System Not Found." Follow the steps in "Change Boot Device Priority" on page 12.

**To boot from a CD:**

- 1 Open the CD tray by pressing the open/close button on the front panel of the CD-ROM drive. The tray will slide out of the drive.
- 2 Open the CD case. Press down on the center hub of the case to release the CD.
- 3 Gently grasp the center hole and outer edge of the CD. Remove it from the case, and place it label-side up in the CD tray.
- 4 Press the open/close button or gently push on the CD tray-it will automatically slide into the drive.
- 5 Push the reset switch on the front panel to restart the server.
- 6 When POST completes, the server boots from the CD, installs a mouse driver, and displays the CD-ROM menu bar. Use the arrow keys to scroll through the menu bar and to view the tasks in the pop-up menus.

## Change Boot Device Priority

You have two choices for changing boot device priority. The easier option (listed first, below) is good for only one boot; the longer option takes effect until you change boot device priority again.

- 1 At any time during POST, press <Esc>. When POST completes, a pop-up Boot menu appears.
- 2 Use the arrow keys to highlight Removable Media, then press <Enter>.

**OR**

- 1 Boot the server. The CD can be in the drive or not.
- 2 The BIOS name and version will display. Immediately below, you'll see the size of memory detected in the server.
- 3 Quickly press the <F2> key (a prompt to do this may or may not appear). After a few bootup tests complete, the main BIOS Setup screen appears.
- 4 From the Setup screen, select Boot Menu. Press <Enter>.
- 5 Select Boot Device Priority, and press <Enter>.
- 6 In the Boot Device Priority screen, use the up- or down-arrow keys to select Removable Media, then press the <+> key to move it to the top of the list.
- 7 Now set the second boot device to Diskette Drive and the third boot device to Hard Drive.
- 8 Press the <F10> key to save your changes and exit Setup.
- 9 When the Exit prompt appears, press <Enter> again.
- 10 The bootup process continues. When finished, an OS prompt displays.
- 11 Make sure the CD is in the drive, and boot the server.

## The Server Product Guide

We provide two forms of Product Guide files on the CD:

- **.PDF files:** read and print .PDF files using the Adobe<sup>†</sup> Acrobat<sup>†</sup> Reader shipped on the CD.
- **.PS (PostScript<sup>†</sup>) files:** print .PS files directly to a PostScript printer.

Because printing from within Acrobat is time-consuming, we recommend printing only a small range of pages for immediate use. If you want to print the entire Product Guide, we recommend printing it from the .PS files.

## Using the Acrobat .PDF Files

Before you can print the Product Guide from Acrobat, you must connect a printer to the parallel port.

- 1 From the CD-ROM menu bar, select Read/Print Manuals and press <Enter>. The Adobe Acrobat reader will be automatically installed on RAM disk d: (simulated disk drive in RAM memory) and automatically started. The reader lets you view and print out a copy of the server Product Guide.
- 2 After the reader starts, a pop-up menu displays a list of several manuals. If you are not sure which manual applies to your server, check the title page of this Quick Start Guide for the correct product reference.
- 3 The menu also includes a manual for SCSI devices in the server.
- 4 Use your mouse or the up- and down-arrow keys to select the manual. Double click the left mouse button or press <Enter> to load the .PDF file for the manual.
- 5 Use your mouse or the tab key to select the .PDF file for the manual. Double click the left mouse button or press an arrow key and <Enter> to view the .PDF file.
- 6 Follow the program options and prompts. If you need to access the Help menu, double click on Help or press <Alt+h>.

## Using the PostScript .PS Files

Before you can print the Product Guide from the CD, you must connect a printer to the parallel port. Use the supplied PostScript files (.PS) to print a copy of the Product Guide.

- 1 From the CD-ROM menu bar, select Quit to DOS and press <Enter>.
- 2 From the pop-up menu, select Quit Now and press <Enter>.
- 3 At the prompt C:\>, type dir c:\manuals and press <Enter>.
- 4 At the prompt, type dir c:\(manual name)\pscript and press <Enter> to see a list of .PS files.
- 5 Use the copy or print command to send the .PS files directly to a PostScript printer using the appropriate driver.
- 6 At the prompt C:\>, type menu and press <Enter> to return to the CD-ROM menu.

## Copy Configuration Software to Diskettes

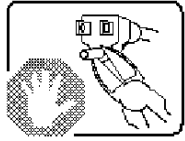
When you copy software from the CD onto diskettes, device drivers suitable for several different OSs are copied onto the diskettes. However, your OS will read only those drivers it can recognize, so you cannot usually check the directory of a diskette that is not formatted for your OS. Instead, you might see a message to the effect, "disk not formatted, do you want to format it now?" Don't worry; the drivers for YOUR OS are on the diskette and available to load on the system.

- 1 Before starting, make sure that you have several blank high-density diskettes.
- 2 From the CD-ROM menu bar, select Create Diskettes and press <Enter>.
- 3 Follow the prompts to copy the software onto the diskettes.
- 4 When finished, from the CD-ROM menu bar, select Quit to DOS and press <Enter>.
- 5 Remove the CD from the CD-ROM drive.

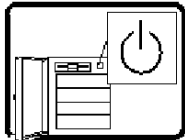
## WARNING: English (US)



The power supply in this product contains no user-serviceable parts. There may be more than one supply in this product. Refer servicing only to qualified personnel.



Do not attempt to modify or use the supplied AC power cord if it is not the exact type required. A product with more than one power supply will have a separate AC power cord for each supply.



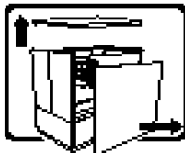
The DC push-button on/off switch on the system does not turn off system AC power. To remove AC power from the system, you must unplug each AC power cord from the wall outlet or power supply.



**SAFETY STEPS:** Whenever you remove the chassis covers to access the inside of the system, follow these steps:

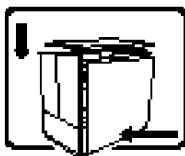
- 1 Turn off all peripheral devices connected to the system.
- 2 Turn off the system by using the push-button on/off power switch on the system.
- 3 Unplug all AC power cords from the system or from wall outlets.
- 4 Label and disconnect all cables connected to I/O connectors or ports on the back of the system.
- 5 Provide some electrostatic discharge (ESD) protection by wearing an antistatic wrist strap attached to chassis ground of the system-any unpainted metal surface-when handling components.
- 6 Do not operate the system with the chassis covers removed.

After you have completed the six SAFETY steps above, you can remove the system covers. To do this:

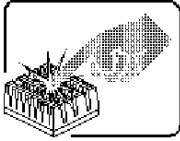


- 1 Unlock and remove the padlock from the back of the system if a padlock has been installed.
- 2 Remove and save all screws from the covers.
- 3 Remove the covers.

For proper cooling and airflow, always reinstall the chassis covers before turning on the system. Operating the system without the covers in place can damage system parts. To install the covers:



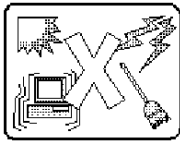
- 1 Check first to make sure you have not left loose tools or parts inside the system.
- 2 Check that cables, add-in boards, and other components are properly installed.
- 3 Attach the covers to the chassis with the screws removed earlier, and tighten them firmly.
- 4 Insert and lock the padlock to the system to prevent unauthorized access inside the system.
- 5 Connect all external cables and the AC power cord(s) to the system.

**WARNING: English** (continued)

A microprocessor and heat sink may be hot if the system has been running. Also, there may be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.



Danger of explosion if the battery is incorrectly re-placed. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.



The system is designed to operate in a typical office environment. Choose a site that is:

- Clean and free of airborne particles (other than normal room dust).
  - Well ventilated and away from sources of heat including direct sunlight.
  - Away from sources of vibration or physical shock.
  - Isolated from strong electromagnetic fields produced by electrical devices.
  - In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppresser and disconnect telecommunication lines to your modem during an electrical storm.
  - Provided with a properly grounded wall outlet.
  - Provided with sufficient space to access the power supply cords, because they serve as the product's main power disconnect.

# Atlas Enterprise Rack Kit Installation

## Safety Guidelines

Before you remove a server cover, observe these safety guidelines:

- Only technically qualified personnel should integrate the server.
- Turn off all peripheral devices connected to the server.
- Turn off the server using the push-button on/off power switch on the front panel of the server, and unplug the AC power cord from each power supply or wall outlet.
- Label and disconnect all peripheral cables attached to the I/O panel on the back of the server.
- Provide some electrostatic discharge (ESD) protection by wearing an antistatic wrist strap attached to chassis ground of the server— any unpainted metal surface— when handling components.

## Server Precautions

**SERVER POWER ON/OFF:** The push-button on/off power switch on the front panel of the server does not turn off the AC power. To remove AC power from the server, you must unplug each AC power cord from each power supply or wall outlet.

**HAZARDOUS CONDITIONS— POWER SUPPLY AND POWER SHARE BACKPLANE:** Hazardous voltage, current, and energy levels are present inside the power supply and the power share backplane enclosures. There are no user-serviceable parts inside them; servicing should only be done by technically qualified personnel.

**HAZARDOUS CONDITIONS— DEVICES AND CABLES:** Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the server and disconnect telecommunications systems, networks, modems, and each power cord attached to the server before opening it. Otherwise, personal injury or equipment damage can result.

**AVOID INJURY:** To avoid personal injury when unpacking the server, use only a mechanical assist unit to lift it off the shipping pallet. The minimum server configuration weighs 38 kg (85 lbs); the maximum weighs 45 kg (100 lbs). Do not attempt to lift or move the server by the handles on the power supplies. Use only a hand-truck or other mechanical assist unit to move the server from one location to another.

**ELECTROSTATIC DISCHARGE (ESD) AND ESD PROTECTION:** ESD can damage disk drives, add-in boards, and other components. This server can withstand normal levels of environmental ESD while hot-swapping SCSI hard disk drives. However, we recommend doing all procedures in this manual only at an ESD-protected workstation. If one is not available, you can provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground of the server— any unpainted metal surface— when handling components.

**HANDLING BOARDS AND MODULES:** Boards and modules can be extremely sensitive to ESD and always require careful handling. After removing a board or module from its protective wrapper or from the server, place it component-side up on a nonconductive, static-free surface. If you place the baseboard on a conductive surface, the battery leads can short out. If they do, this will result in a loss of CMOS data and will drain the battery. Do not slide a board or module over any surface.  
**SERVER COOLING AND AIRFLOW:** Operating the server with the covers removed can damage the server components. For proper cooling and airflow, always replace the covers before turning on the server.

## Equipment Rack Precautions

**ANCHOR THE EQUIPMENT RACK:** The equipment rack must be anchored to an unmovable support to prevent it from falling over when one or more servers are extended in front of it on slide assemblies. The anchors must be able to withstand a force of up to 113 kg (250 lbs). You must also consider the weight of any other device installed in the rack.

**MAIN AC POWER DISCONNECT:** You are responsible for installing an AC power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire unit, not just to the server(s).

**GROUNDING THE RACK INSTALLATION:** To avoid the potential for an electrical shock hazard, you must include a third wire safety grounding conductor with the rack installation. If server power cords are plugged into AC outlets that are part of the rack, then you must provide proper grounding for the rack itself. If server power cords are plugged into wall AC outlets, the safety grounding conductor in each power cord provides proper grounding only for the server. You must provide additional, proper grounding for the rack and other devices installed in it.

**OVERCURRENT PROTECTION:** The server is designed for an AC line voltage source with up to 20 amperes of overcurrent protection. If the power system for the equipment rack is installed on a branch circuit with more than 20 amperes of protection, you must provide supplemental protection for the server. If more than one server is installed in the rack, the power source for each server must be from a separate branch circuit. The overall current rating of a server configured with three power supplies is under 12 amperes.

**TEMPERATURE:** The operating temperature of the server, when installed in an equipment rack, must not go below 5 °C (41 °F) or rise above 35 °C (95 °F). Extreme fluctuations in temperature can cause a variety of problems in your server.

**VENTILATION:** The equipment rack must provide sufficient airflow to the front of the server to maintain proper cooling. It must also include ventilation sufficient to exhaust a maximum of 4,100 Btu's per hour for the server. The rack selected and the ventilation provided must be suitable to the environment in which the server will be used.

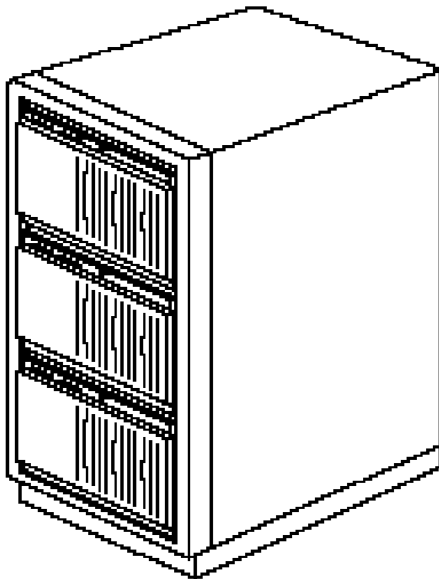
## Configuring for Rack Mount

Before starting, please read the "Safety Guidelines" on page 18.

### Prepare the Slide Assemblies

Table 1:

| Specification            | Rack Mode  |
|--------------------------|--|
| Height                   | 7u   |
| Width                    | 19 inch rack   |
| Depth                    | 25 inches  |
| Weight                   | 38.25 kg (85lbs) minimum configuration<br>45 kg (100lbs) maximum configuration |
| Required front clearance | 10 inches (inlet airflow <35°C / 95° F)  |
| Required rear clearance  | 8 inches (no airflow restriction)  |
| Required side clearance  | N/A  |



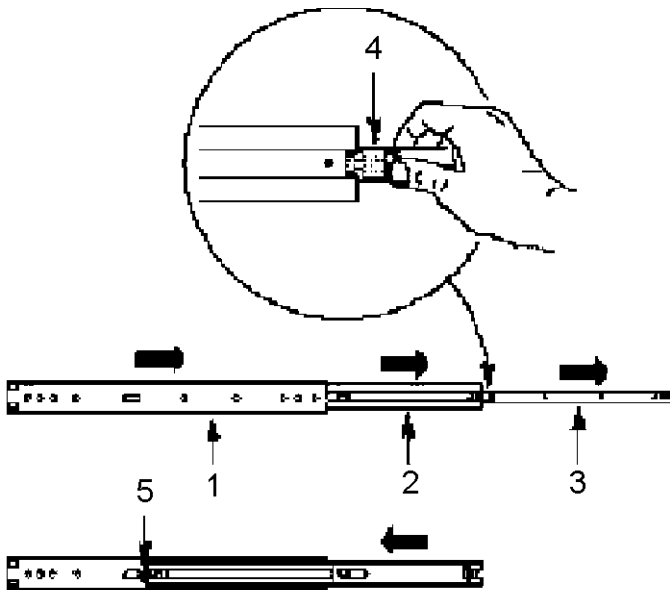
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Equipment Rack with Three Servers

## Tools You Need

- Phillips (crosshead) screwdriver (#1 and #2 bits)
- Pencil

- 1 Remove the slide assemblies from the kit.
- 2 Orient a slide assembly so that the smallest outer bar is facing down.
- 3 Fully extend the telescoping slide assembly until the center bar hits the safety latch on the small outer bar (all three overlapping bars will be visible).
- 4 Grasp the small outer bar with your right hand so that your thumb is on the safety latch of the small outer bar.
- 5 Press and hold the safety latch down, and at the same time, grasp the large outer bar with your left hand.
- 6 Pull the small bar out of the center bar; this takes a little force to separate them. Set the small bar aside to attach to the chassis in a later step.
- 7 Orient the center bar and large outer bar assembly so that the center bar is facing up.
- 8 Grasp the center bar with your right hand and the large outer bar with your left hand so that your left-hand thumb is on the safety latch of the center bar.
- 9 Press the safety latch, and slide the bars together. Set the center bar and large outer bar assembly aside to attach to the equipment rack in a later step.
- 10 Prepare the other slide assembly by repeating steps 2–9 above.



- 1 Large outer bar
- 2 Center bar
- 3 Small outer bar
- 4 Safety latch on the small outer bar
- 5 Safety latch on the center bar

*Slide Assembly*

## Prepare the Server

Before you can install the server in the 19-inch equipment rack, you must install handles, and the small bars of the slide assemblies onto the sides of the server.

### ATTACH THE CHASSIS HANDLES

Before you can attach the chassis handles, the server must be on its side, in the horizontal position in which you will slide it into the rack. If the server is not already in the proper position, you must move it. See step one, below.

**AVOID INJURY:** To avoid personal injury when unpacking the server, use only a mechanical assist unit to lift it off the shipping pallet. The minimum server configuration weighs 38 kg (85 lbs); the maximum weighs 45 kg (100 lbs).

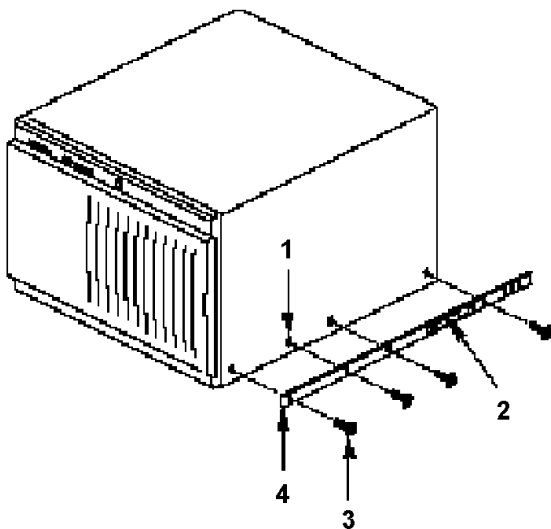
Do not attempt to lift or move the server by the handles on the power supplies.

Use only a hand-truck or other mechanical assist unit to move the server from one location to another.

- 1 If the server is not already in the proper position, then face the front of the server and, with the help of a mechanical assist unit, carefully tip it onto its side. The long front edges (19 inches) should now be horizontal; the short front edges (12.25 inches) should now be vertical, with the front-panel LEDs at the top left and the hard drive bays at the bottom right of the front panel. The bezel frame has rectangular cutouts on its edges where the chassis handles fit; you should be able to see two threaded holes in that cut-out space where the handles attach to the chassis.
- 2 Orient each handle so the two screw holes on the long edge of each handle align with the threaded holes in the chassis. Because the bezel frame's cutouts act as guides, the handles can be installed in only one way.
- 3 Use four screws from the kit to attach the handles to the chassis.

### Attach the Small Bar of the Slide Assembly to the Server

- 1 Remove four screws from the kit.
- 2 While facing the side of the server, orient the small bar so that the flat side faces the top and the right-angle end faces the front of the server.
- 3 Align the first hole in the right-angle end of the bar with the first threaded hole in the side of the chassis.
- 4 Insert a screw through the hole in the bar and into the chassis wall. Then loosely tighten the screw.
- 5 Align the rest of the holes in the bar with the remaining three threaded holes along the side of the chassis.
- 6 Insert three more screws through the bar and into the threaded holes in the chassis wall. Then tighten all four screws firmly (6.0 inch-pounds).
- 7 Install the remaining small bar on the other side of the chassis by repeating steps 1–6 above.



*Small Bar of the Slide Assembly*

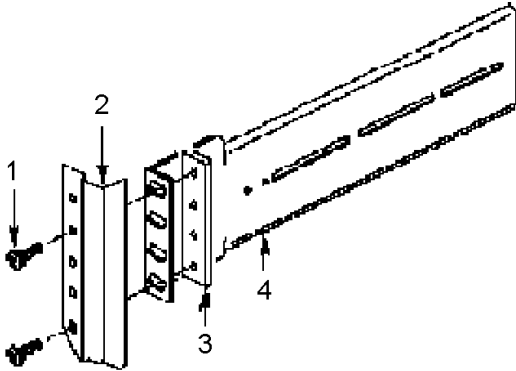
- 1 Threaded hole in chassis
- 2 Safety latch
- 3 Screw
- 4 Small outer bar (right-angle end)

### Prepare the Equipment Rack

Before you can install the server in the 19-inch equipment rack, you must attach the center bar and large outer bar assemblies to the vertical rails of the rack.

**Note:** Attach the Right-angle Extension Brackets to the Equipment Rack Mounting holes in the vertical rails of equipment racks are commonly spaced in a 5/8 x 5/8 x 1/2-inch sequence. Perform the following steps carefully; brackets must be mounted with precision to allow room for the next server you install in a rack.

- 1 Remove a right-angle extension bracket, two screws, and a bar nut from the kit.
- 2 While facing the front or back of the rack, orient the right-angle extension bracket so that the short side with the four mounting holes is facing toward the outside edge of the vertical rail.
- 3 Position the bracket behind the mounting holes in the vertical rail.

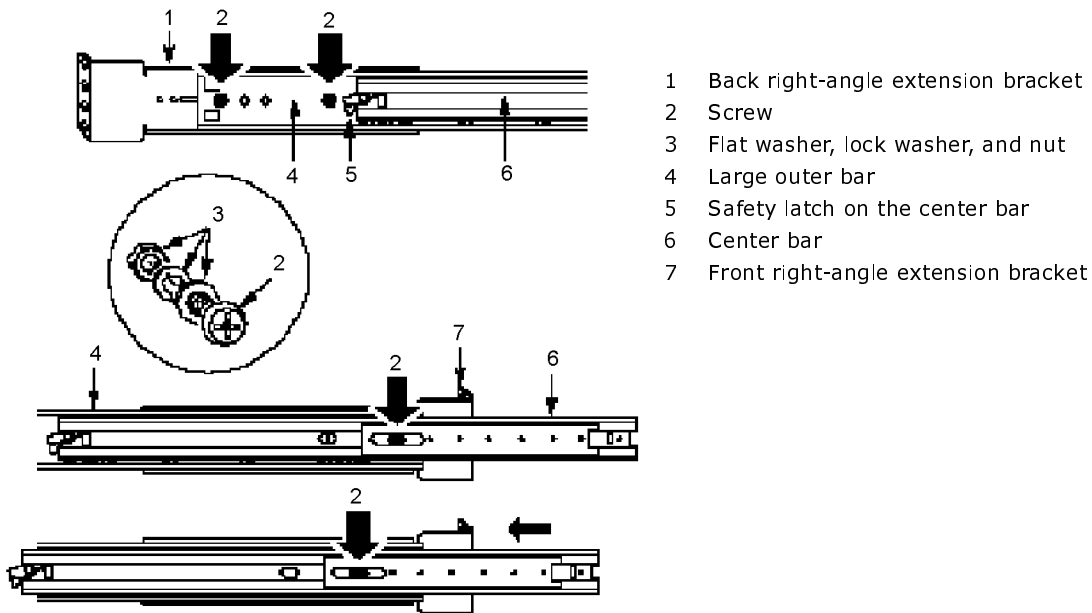


*Right-angle Bracket and Vertical Rail*

- 1 Screw
  - 2 Vertical rail
  - 3 Bar nut
  - 4 Right-angle extension bracket
- 4 With a pencil, mark the top and bottom hole locations of the bracket on both sides of the vertical rail; no hole numbers are printed on the rail.
  - 5 Insert a screw through the marked top hole in the rail and through the top hole in the bracket. Place a bar nut on the screw and loosely tighten it. Repeat for the marked bottom hole.
  - 6 Install the three remaining right-angle extension brackets on the other three vertical rails by repeating steps 1–5 above.

## Attach Center Bar and Large Outer Bar Assemblies to the Equipment Rack

- 1 Orient a center bar and large outer bar assembly so that the flat side is facing toward the brackets attached to the vertical rails and the safety latch on the center bar is near the back of the rack.
- 2 Press the flat side of the outer bar into the U-shaped sections of the brackets.
- 3 Slide the assembly toward the front of the rack until the end of the outer bar is flush with the end of the U-shaped section of the front bracket.
- 4 Gently slide the center bar toward the front of the rack, and position the oblong slot in it over the first hole in the large outer bar. Insert a screw through the hole in the bar and the first hole in the front bracket. Place a lock washer and a nut on the screw, and loosely tighten it.
- 5 Position the oblong slot in the center bar over the third hole back from the front of the large outer bar. Insert an 8-32 screw through the hole and the oblong slot in the front bracket. Place a lock washer and an 8-32 nut on the screw, and loosely tighten it.
- 6 The back bracket has two holes and three slots in it. This end of the outer bar has four holes in it. Which holes and slots you use depend on the depth of the equipment rack. After fitting the bar into the bracket, insert two screws through the holes in the bar and the appropriate oblong slots in the bracket. Place a lock washer and a nut on each screw, and loosely tighten them.
- 7 Ensure that the brackets and bars are positioned correctly in the rack. Then tighten all screws firmly (6.0 inch-pounds).



Center Bar and Large Outer Bar Assembly

## Installing the Server in the Rack

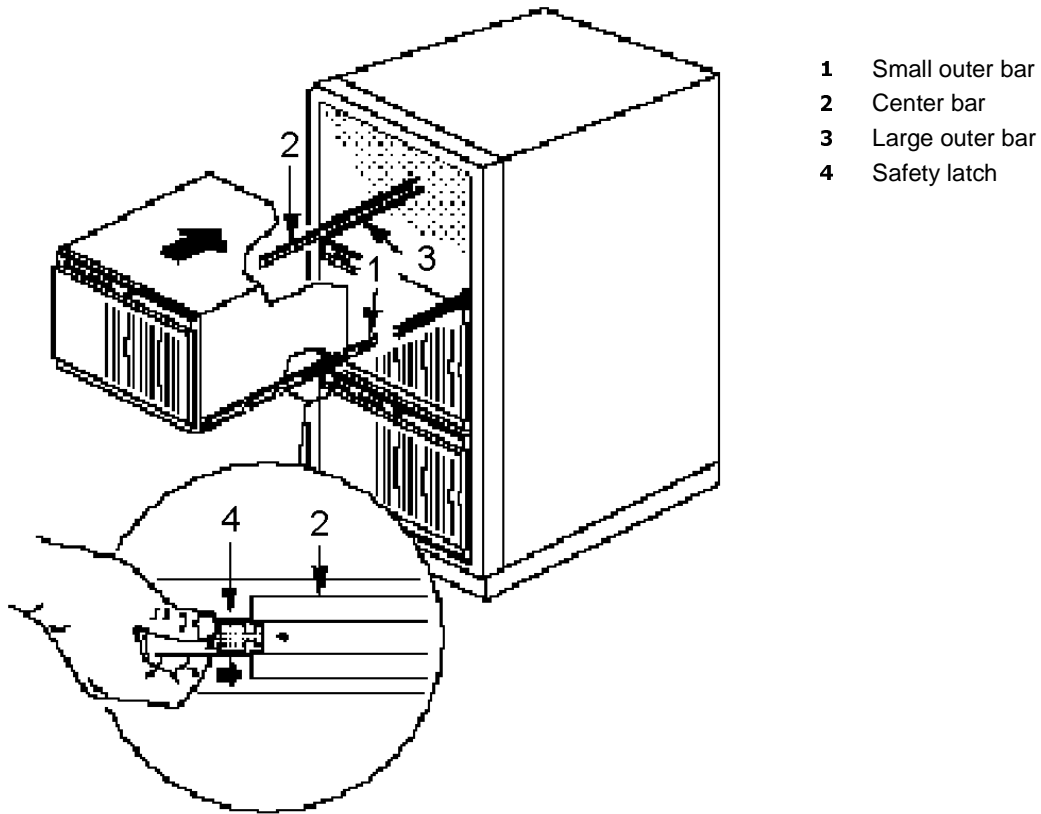
**ANCHOR THE EQUIPMENT RACK:** The equipment rack must be anchored to an unmovable support to prevent it from falling over when one or more servers are extended in front of it on slide assemblies. The anchors must be able to withstand a force of up to 113 kg (250 lbs). You must also consider the weight of any other device installed in the rack.

**Caution:** To avoid personal injury when unpacking the server, use only a mechanical assist unit to lift it off the shipping pallet. The minimum server configuration weighs 38 kg (85 lbs); the maximum weighs 45 kg (100 lbs).

Do not attempt to lift or move the server by the handles on the power supplies.

Use only a hand-truck or other mechanical assist unit to move the server from one location to another.

- 1 Pull the telescoping center bars out of the large outer bars until they are fully extended and locked in place.
- 2 Use a mechanical assist unit to carefully pick up the server; gently slide the small bars attached to each side of the server into the extended center bars.
- 3 When the server stops, press in on the safety latches on the small bars and gently slide the server into the rack.
- 4 Connect all external cables and the power cord(s) to the server.



*Installing the Server in the Rack*